
# Chapter Two
# FORECASTS

# FORECASTS

Facility planning must begin with a definition of the demand that may reasonably be expected to occur at the facility over a specific period of time. For Laughlin/Bullhead International Airport, this involves forecasts of aviation activity indicators through the year 2020. In this master plan, forecasts of passenger enplanements, based aircraft, and aircraft operations will serve as the basis for facility planning.

FAA Advisory Circular (AC) 150/5070-6 outlines six standard steps involved in the forecast process. These include:

1) Obtain existing FAA and other related forecasts for the area served by the airport;

2) Determine if there are significant local conditions or changes in forecast factors;

3) Make and document any adjustments to the aviation activity forecast to account for such conditions and factors;

4) Where applicable, consider the effects of changes in uncertain factors affecting demand for airport services;

5) Evaluate the potential for peak loads within the overall forecasts of aviation activity; and

6) Monitor actual activity levels over time to determine if adjustments are necessary in the forecasts.

It is virtually impossible to predict with certainty year-to-year fluctuations of activity when looking twenty years into the future. Because aviation activity can be affected by many influences at the local, regional, and national level, it

is important to remember that forecasts are to serve only as guidelines and planning must remain flexible enough to respond to unforeseen facility needs.

Recognizing this, it is intended to develop a master plan for Laughlin/Bullhead International Airport that will be demand-based rather than time-based. As a result, the reasonable levels of activity potential that are derived from this forecasting effort will be related to the planning horizon levels rather than dates in time. These planning horizons will be established as levels of activity that will call for consideration of the implementation of the next step in the master plan program.

The following forecast analysis examines recent developments, historical information, and current aviation trends to provide an updated set of aviation demand projections for Laughlin/Bullhead International Airport. The intent is to permit the Mohave County Airport Authority to make the planning adjustments necessary to ensure that the facility meets projected demands in an efficient and cost effective manner.

## *NATIONAL AVIATION TRENDS*

The Federal Aviation Administration (FAA) publishes a national aviation forecast on an annual basis. These forecasts include projections for major air carriers, regional/commuters, general aviation, and FAA workload measures. They are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and by the general public. The current edition when this chapter was prepared was **FAA Aviation Forecasts - Fiscal Years 1998-2009**. The forecast uses the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

For the U.S. aviation industry, the outlook for the next twelve years is for moderate economic growth, constant real fuel prices, and low-to-moderate inflation. Scheduled domestic passenger enplanements are forecast to increase 53.0 percent -- air carriers increasing 51.5 percent and regional/ commuters growing by 89.0 percent.

### COMMERCIAL AVIATION

The commercial aviation industry recorded its fourth consecutive year of strong traffic growth in 1997. To a large extent, growth in both domestic and international markets continue to be driven by the continued strong expansion in the U.S. and world economies. Domestic passenger enplanements grew by 3.4 percent, while load factors established an all-time high of 68.9 percent.

The financial performance of the U.S. commercial airlines has shown dramatic improvement over the past four years. Between 1990 and 1993, U.S. carriers' cumulative operating losses totaled nearly $5 billion, while net losses

totaled over $11 billion. However, over the past four years, the industry has reported cumulative operating profits of almost $21.7 billion, while net profits have totaled over $9.4 billion. The industry will need similar or higher profits over the next several years if the industry is to be able to finance the replacement and new aircraft needed to accommodate future growth and meet the federally mandated noise regulations.

New aircraft deliveries totaled 623 in FY 1997, a 36.2 percent increase over the same period in 1996. The relatively large increase in new aircraft deliveries in 1997 is due, in large part, to the industry's dismal financial performance during the early 1990s, a period during which there were relatively few orders for new aircraft. As such, new aircraft deliveries slowed considerably during the 1995-96 period.

The demand for narrow-body aircraft continues to outpace the demand for wide-body aircraft, accounting for nearly 60 percent of deliveries last year. However, this does not reflect the increasing demand for the new 30 to 75 seat regional jets among the commuter airlines.

Although the number of regional jets in worldwide service now total less than 400, orders for these aircraft currently total in excess of 700.

While there are a number of positive signs that point towards a continuation of the current rebound in commercial aviation, there are also a number of uncertainties that could limit the growth of the economy, and ultimately, the demand for aviation services. These include higher fares being paid by business travelers, increasing personal debt which may affect discretionary travel, and continuing stagnation in middle class incomes.

The FAA's projections for domestic and international commercial service passenger enplanements indicate relatively strong growth. Domestic enplanements are projected to grow at an average annual rate of 3.5 percent through the year 2009. International enplanements are projected to grow at an average annual rate of 5.8 percent. **Exhibit 2A** graphically presents the FAA's commercial service forecasts.

## REGIONAL/COMMUTER AIRLINES

The regional/commuter airline industry is defined as the air carriers providing regularly scheduled passenger service with fleets composed primarily of aircraft having 60 seats or less. The regional/commuter industry has been in a period of transition since the mid-1980s. Dramatic growth in code-sharing agreements with the major carriers, followed by a wave of air carrier acquisitions and purchases of equity interests, has resulted in the transfer of large numbers of short-haul jet routes to their regional partners. This transfer of routes has fueled the regional industry's historically high rate of growth over the past decade.

The traffic statistics for 1997, which reflect an increase in enplanements of 3.0 percent, actually understate the level of growth. This is the result of an

enforcement of regional/commuter data reporting requirements that had not been strictly enforced in the past. The actual growth rate in 1997 was probably 4.5 to 5.0 percent.

Industry growth is expected to continue to outpace that of the larger commercial air carriers. The introduction of new state-of-the-art aircraft, especially high-speed turboprops and regional jets with ranges of up to 1,000 miles, is expected to open up new opportunities for growth in non-traditional markets. However, the primary role of the regional airline industry will remain that of feeding traffic to the major and national carriers even as they expand into markets with longer route segments.

The increased use of regional jets is expected to lead to another round of route rationalization by the larger commercial carriers, although this phenomenon is expected to diminish considerably in 2000 and beyond.

Passenger enplanements are expected to increase at an average annual rate of 5.5 percent during FAA's 12-year forecast period, with annual enplanements increasing from 61.9 million in 1997 to 117.0 million by 2009. The average seats per aircraft is also projected to grow, from 31.2 seats in 1997 to 40 seats in 2009. **Exhibit 2B** depicts passenger and fleet mix forecasts.

## AIR CARGO

While the FAA does not project air cargo tonnage or review trends in the air cargo industry within their annual forecasting document, other industry groups monitor these trends and provide an overview of future growth, markets, and equipment. Since air cargo has been growing at annual rates well above passenger traffic for many years, it is placing increasing demands on facilities at airports across the country. On a long-term basis (based upon recent information presented in *Aviation Week & Space Technology*), the air cargo industry is expected to grow by an annual rate of seven percent...equating to a doubling of activity every ten years. Long term growth is expected to be highest in the Asian markets. The express segment of the air cargo industry is growing at approximately 20 percent per annum. The carriers providing express services continue with their widespread international expansion.

The world's air cargo jet fleet is expected to double in size during the next 20 years . . . from roughly 1,350 units today to more than 2,700. As of late 1997, the small freighter fleet (payloads less than 60,000 pounds) totals 575 units (42 percent). Seventy-five percent of the small freighters are 727-100F and -200F aircraft, operated primarily by integrated express carriers in the U.S., Asia and Europe. Other aircraft in this category include DC-9s, 737-200s/-300s, and BAe 146 QTs.

The medium-sized narrow-body fleet (payload of 60,000-120,000 pounds) has traditionally been comprised of first-generation four-engine jets . . . 707s and DC-8s. Newer technology aircraft in this group include the 757-200F. The total number of aircraft in this group totals 419 units (30.5 percent). The stretched DC-8-60 and -70 series remain popular, but 707 and early-model DC-8s

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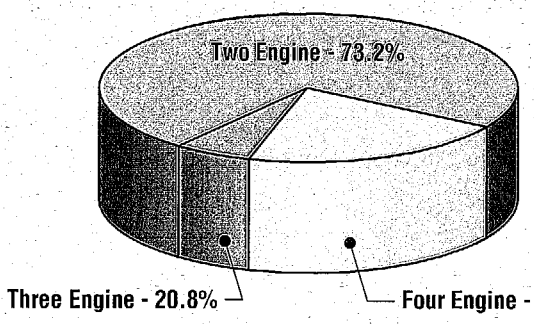
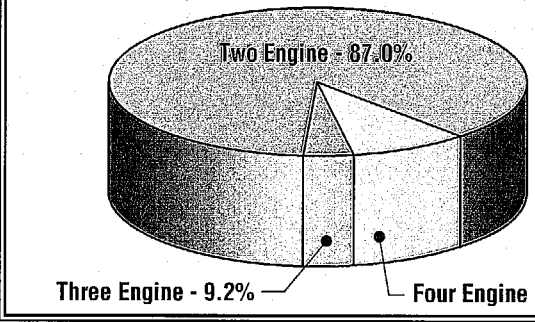
# PASSENGER AIRCRAFT

## NARROW-BODY

**1997 - 4,079 Aircraft**

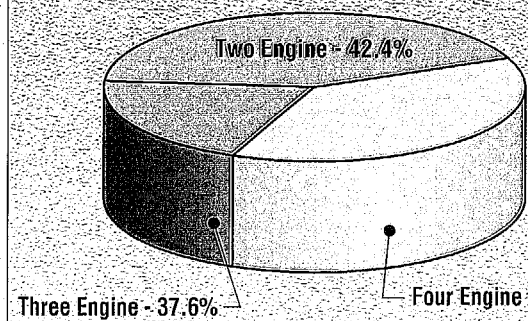



**2009 - 5,888 Aircraft**

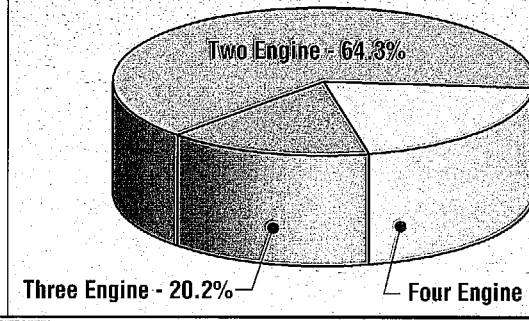



## WIDE-BODY

**1997 - 874 Aircraft**

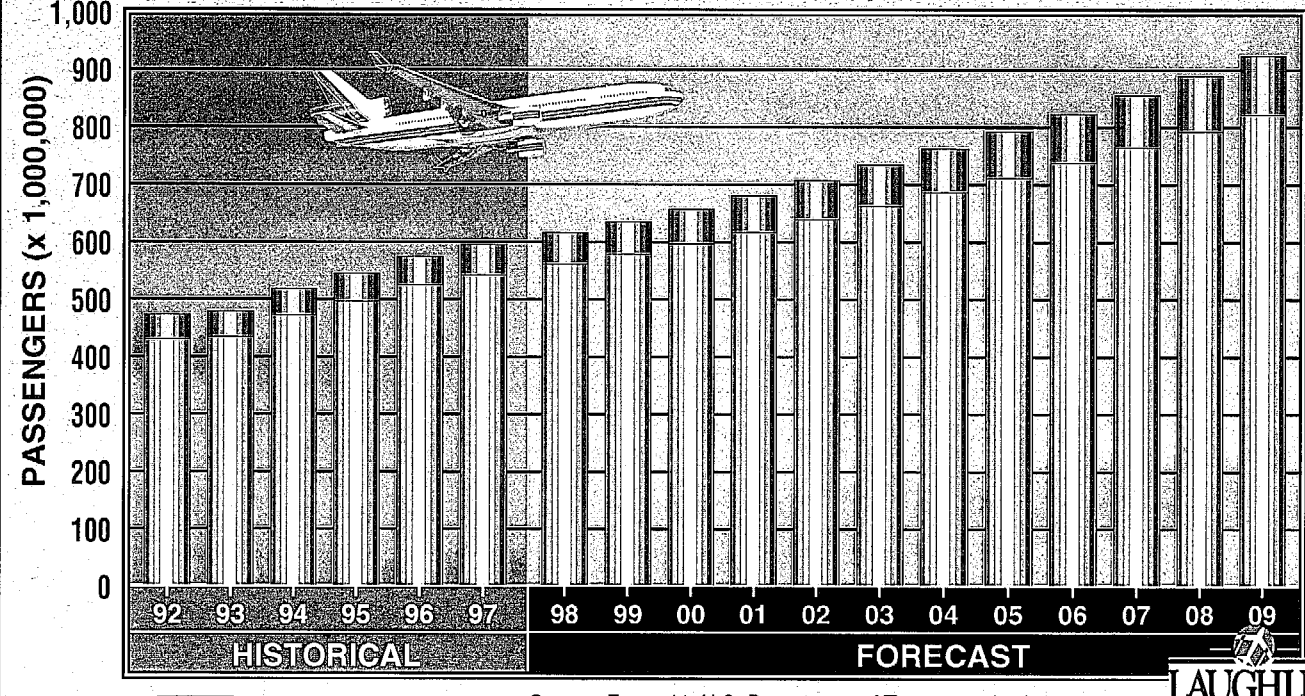



**2009 - 1,531 Aircraft**




Source: FAA Aviation Forecasts, FY 1998-2009

# SCHEDULED PASSENGER ENPLANEMENTS




Source: Form 41, U.S. Department of Transportation/
FAA Aviation Forecasts, FY 1998-2009

LAUGHLIN BULLHEAD INTERNATIONAL Airport

Exhibit 2A
U.S. COMMERCIAL FORECASTS

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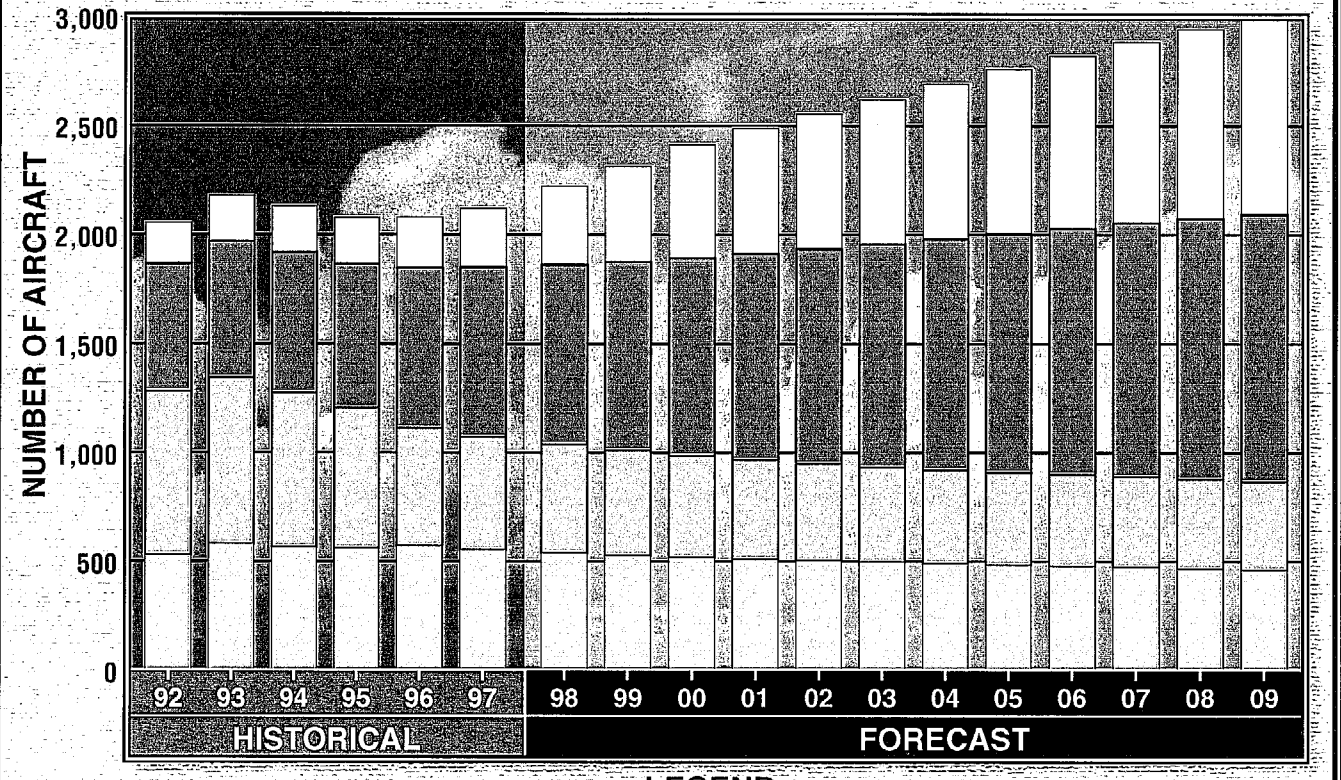
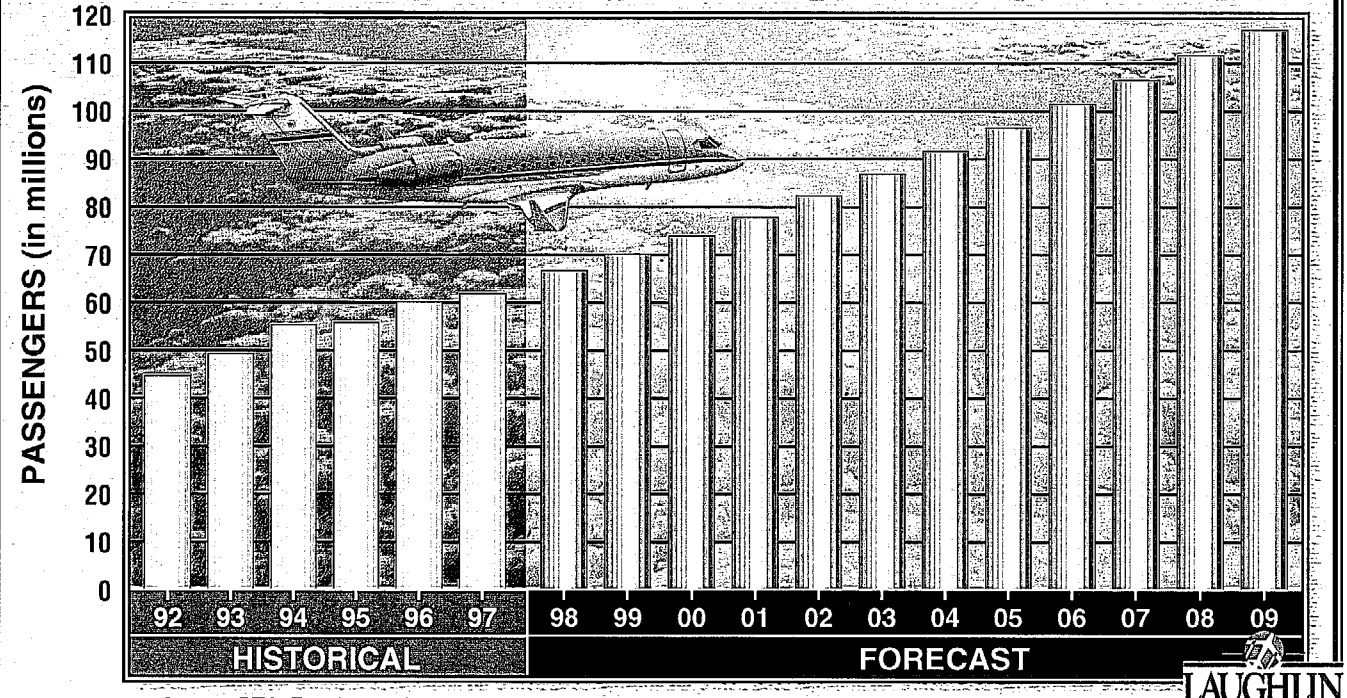
# PASSENGER AIRCRAFT




Source: FAA Aircraft Utilization and Propulsion Reliability Report/FAA Aviation Forecasts, FY 1998-2009

# SCHEDULED PASSENGER ENPLANEMENTS




Source: BTS, Form's 298-C and 41, U.S. Department of Transportation/
FAA Aviation Forecasts, FY 1998-2009

LAUGHLIN BULLHEAD INTERNATIONAL Airport

Exhibit 2B
U.S. REGIONAL/COMMUTER FORECASTS

are being retired for aging, noise, and fuel/maintenance cost reasons.

The medium-sized wide-body fleet (payload of 70,000-140,000 pounds) include first-generation wide bodies (DC-10-10s and L-1011s) and new technology models (767s, A300s, and A310s). There are 123 units in this category (9 percent), but it is forecast to grow at the fastest rate of any group. Demand is being driven by the integrated express carriers.

Large wide-body freighters (payloads greater than 140,000 pounds) are popular among the combination carriers requiring significant payloads and longer stage lengths. There are 256 units (18.5 percent) in this category. Dominated by the 747F, the category also includes DC-10-30Fs, and MD-11Fs.

As has been true in the past, converted aircraft . . . rather than newly-built units . . . will be the primary source of future freighter capacity. Approximately 45 percent of the current fleet is expected to remain in the fleet 20 years from now. Nearly half of the total fleet in twenty years will consist of converted aircraft. In the past year, FedEx launched a major DC-10-10 conversion program, which may result in 79 total aircraft being converted to freighter use for FedEx. Meanwhile, orders for 62 A300B4 freighter conversions has been announced, and it is anticipated that 757 and A320 conversion packages may be forthcoming, to increase capacity in the smaller freighter categories.

## GENERAL AVIATION

By most statistical measures, general aviation recorded its third consecutive year of growth in 1997. Following more than a decade of decline, the general aviation industry was revitalized with the passage of the General Aviation Revitalization Act in 1994 (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture). This legislation sparked an interest to renew the manufacturing of general aviation aircraft due to the reduction in product liability and a renewed optimism for the industry. The high cost of product liability insurance was a major factor in the decisions by many American aircraft manufacturers to slow or discontinue the production of general aviation aircraft.

According to the General Aviation Manufacturers Association (GAMA), aircraft shipments and billings grew for the third consecutive year in 1997, following fourteen years of annual declines. In 1997, general aviation aircraft manufacturers shipped a total of 1,569 aircraft totaling $4.7 billion. For 1997, aircraft shipments were up 38.8 percent and billings up 49.5 percent over 1996. In 1996, general aviation aircraft manufacturers shipped a total of 1,130 aircraft totaling $3.1 billion.

For 1997, piston engine aircraft shipments were up 64.2 percent and turbine engine aircraft shipments up 10.2 percent. Single-engine piston aircraft recorded the single largest gain,

growing 70.8 percent in 1997 while turbofan aircraft shipments increased 44.4 percent. Multi-engine piston aircraft shipments grew 14.3 percent. Only turboprop aircraft registered a decline in shipments in 1997 (18.3 percent).

Despite a small decline in the number of active pilots, student pilot starts were up 1.3 percent in 1997, following a 6.3 percent decline in 1996. These student pilots are the future of general aviation and are one of the key factors impacting the future direction of the general aviation industry. This increase combined with the increases in piston-powered aircraft shipments and aircraft production are a signal that many of the industry initiated programs to revitalize general aviation may be taking hold.

For 1998, GAMA has indicated that general aviation billings in the first quarter of 1998 were the highest in history. Billings have increased from $886 million for the first quarter of 1997 to $1.1 billion for the first quarter of 1998, equating to a 24.5 percent increase over the previous year. GAMA also indicates that aircraft shipments for the first quarter of 1998 increased by 92.4 percent over the same period in 1997. Aircraft shipments rose to 456, up from 237 in 1997, and jet deliveries reached 82 units, up 30.2 percent over 1997 first quarter shipments.

The most notable trend in general aviation is the continued strong use of general aviation aircraft for business and corporate uses. According to the FAA, general aviation operations and general aviation aircraft handled at enroute traffic control centers increased for the sixth consecutive year, signifying the continued growth in the use of the more sophisticated general aviation aircraft. In 1996 (the latest year of recorded data), the number of hours flown by the combined use categories of business and corporate flying represented 22.5 percent of total general aviation activity. In 1990, the number of hours flown by the combined use categories of business and corporate flying represented 21.8 percent of total general aviation activity.

Manufacturer and industry programs and initiatives continue to revitalize the general aviation industry. The newest program "GA Team 2000" has the goal of 100,000 annual student pilot starts by the year 2000. The New Piper Aircraft company has created Piper Financial Services (PFS) to offer competitive interest rates and/or leasing of Piper aircraft.

The most striking industry trend is the continued growth in fractional ownership programs. Fractional ownership programs allow businesses and individuals to purchase an interest in an aircraft and pay for only the time that they use the aircraft. This has allowed many businesses and individuals, who might not otherwise, to own and use general aviation aircraft for business and corporate uses. Aircraft manufacturers Raytheon, Bombardier, and Dassault Falcon Jets have all established fractional ownership programs. Industry leader Executive Jet Aviation has expanded their program to include Boeing Business Jets and Gulfstream Aircraft.

Based on these assumptions, general aviation activity by fiscal year 2009 is forecast to increase by 18.9 percent at combined FAA and contract towered airports and 24.6 percent at air route traffic control centers. The general aviation active fleet is projected to increase by 12.5 percent while general aviation hours flown are forecast to increase by 18.1 percent.

**Exhibit 2C** depicts the FAA forecast for active general aviation aircraft in the United States. The FAA forecasts general aviation active aircraft to increase at an average annual rate of 1.0 percent over the next 12 years, increasing from 187,312 in 1996 to 212,960 in 2009. Over the forecast period, the active fleet is expected to increase by almost 2,000 annually (considering approximately 2,000 annual retirements of older piston aircraft and new aircraft production at 4,000 annually). Turbine-powered aircraft are projected to grow faster than all other segments of the national fleet and grow 2.2 percent annually through the year 2008. This includes the number of turboprop aircraft growing from 5,309 in 1996 to 6,482 in 2009 and the number of turbojet aircraft increasing from 4,287 in 1996 to 6,228 in 2009. Amateur built aircraft are projected to increase at an average annual rate of 1.1 percent over the next twelve years, increasing from 16,198 in 1996 to 18,622 in 2008.

## *AIRPORT SERVICE AREA*

The service area of an airport is defined by its proximity to other airports providing similar service. The closest commercial service airports are located at Kingman (approximately 37 miles west), Lake Havasu (approximately 70 miles south), and Las Vegas (approximately 95 miles north). Within these limits Laughlin/Bullhead International Airport's commercial service area extends into the three states of Arizona, Nevada, and California. This includes the westernmost portions of Mohave County in Arizona, the southern tip Clark County in Nevada, and eastern portions of San Bernadino County in California.

With commuter service available at Kingman and Lake Havasu City, Bullhead City and Laughlin are the largest communities served by the Laughlin/Bullhead International Airport. McCarren International Airport in Las Vegas is a large hub airport within a two hour drive of Laughlin and Bullhead City. The service available at McCarren does attract some local air traffic directly to that airport and has an effect on the passenger activity at Laughlin/Bullhead International Airport.

The general aviation service area is smaller than the commercial service area due to the availability of more general aviation airports. This limits the general aviation service area to approximately a twelve to fifteen mile radius from the airport. In addition, portions of the local service area are shared with the privately-owned airports of Sun Valley and Eagle on the south side of Bullhead City.

## *FORECAST METHODOLOGY*

The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Methodologies frequently considered include: trend line projection, correlation/regression analysis, and market share analysis.

Trend line projection is probably the simplest and most familiar of forecasting techniques. By fitting classical growth curves to historical demand data, then extending them into the future, a basic trend line projection is produced. A basic assumption of this technique is that outside factors will continue to affect aviation demand in much the same manner as in the past. As broad as this assumption may be, the trend line projection does serve as a reliable benchmark for comparing other projections.

Correlation analysis provides a measure of the direct relationship between two separate sets of historic data. Should there be a reasonable correlation between the data sets, further evaluation using regression analysis may be employed.

In regression analysis, values for the aviation demand element in question, **the dependent variable**, are projected on the basis of one or more other indicators, **the independent variables.** Historical values for all variables are analyzed to determine the relationship between the independent and dependent variables. These relationships may then be used, with projected values of the independent variable(s), to project corresponding values of the dependent variable.

Market share analysis involves a historical review of the activity at an airport or airport system as a percentage share of a larger statewide or national aviation market. Trend analysis of this historical share of the market is followed by projection of the share into the future. These shares are then multiplied by forecasts of the activity within the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections, and similarly can provide a useful check on the validity of other forecasting techniques.

Referencing the population data and other socioeconomic information outlined in the previous chapter, forecasts are developed in the following sections for several aviation categories, including:

- Commercial service activity, including enplaned passengers and operations
- Other air taxi operations
- General aviation activity, including based aircraft and operations
- Military operations
- Peaking Characteristics

The demand forecasts will provide the basis for use in examining aviation facilities development over the planning horizons.

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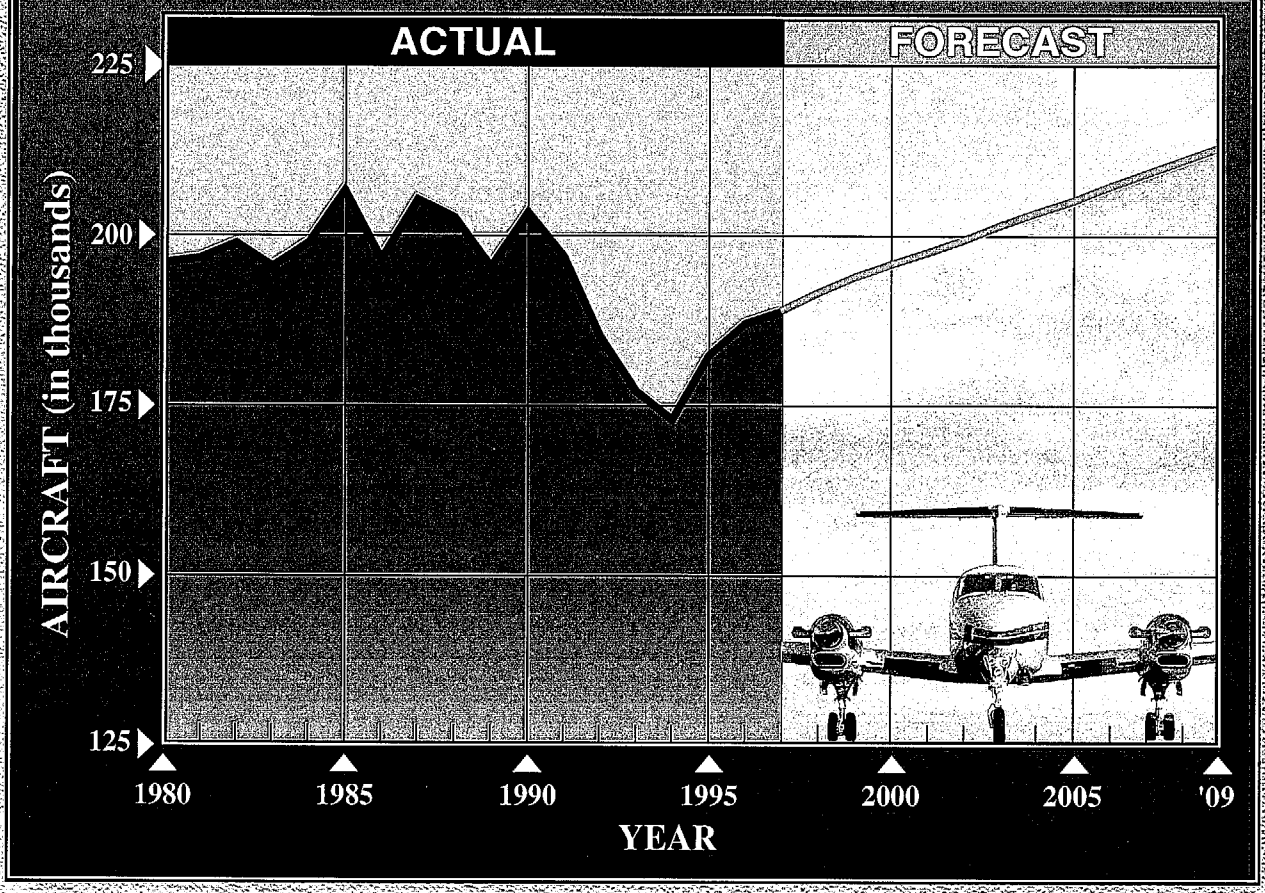
# ACTIVE GENERAL AVIATION AIRCRAFT




# U.S. ACTIVE GENERAL AVIATION AIRCRAFT (in thousands)

| As of January 1 | FIXED WING | | | | ROTORCRAFT | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PISTON | | TURBINE | | | | | | |
| | Single Engine | Multi-Engine | Turboprop | Turbojet | Piston | Turbine | Experimental | Other | Total |
| 1997 | 136.7 | 15.8 | 5.3 | 4.4 | 2.4 | 4.0 | 16.4 | 4.2 | 189.3 |
| 2000 | 141.2 | 16.0 | 5.5 | 4.9 | 2.3 | 4.2 | 17.1 | 4.3 | 195.6 |
| 2003 | 145.3 | 16.2 | 5.8 | 5.4 | 2.2 | 4.4 | 17.7 | 4.4 | 201.4 |
| 2006 | 149.5 | 16.5 | 6.1 | 5.8 | 2.2 | 4.5 | 18.1 | 4.5 | 207.2 |
| 2009 | 153.7 | 16.6 | 6.5 | 6.2 | 2.1 | 4.6 | 18.6 | 4.6 | 212.9 |

**Source:** FAA Aviation Forecasts, Fiscal Years 1998-2009.

**Notes:** Detail may not add to total because of independent rounding. An active aircraft must have a current registration and it must have been flown at least one hour during the previous calendar year.

LAUGHLIN BULLHEAD INTERNATIONAL Airport

Exhibit 2C
U.S. ACTIVE GENERAL AVIATION AIRCRAFT FORECASTS

## *COMMERCIAL SERVICE FORECASTS*

To determine the types and sizes of facilities necessary to properly accommodate present and future airline activity at any airport, two basic elements must be forecast: annual enplaned passengers and annual aircraft operations. Annual enplaned passengers is the most basic indicator of demand for commercial service activity. From a forecast of annual enplanements, operations and peak period activity can be projected based upon behavioral factors characteristic of Laughlin/Bullhead International Airport and the airline industry as a whole.

### AIR SERVICE

**Exhibit 2D** and **Table 2A** examine records of annual passenger enplanements at Laughlin/Bullhead International Airport (IFP) since 1983. Over the span of sixteen years, IFP experienced two significant one-year increases in passenger traffic.

Between 1986 and 1987 passenger enplanements grew over five-fold from 6,213 enplanements to 33,819 percent as the airport experienced its first significant improvements in air service. At this time the airport was served by its original runway and commercial service consisted of commuter airlines using aircraft with 36 or less seats. The next major increase in passenger traffic came in 1993 when annual enplanements jumped from 38,068 to 97,095. The year before, the new runway and passenger terminal facilities were completed, allowing the airport to accommodate commercial jet aircraft. The airport began to handle several charter flights and Morris Air began scheduled air service with Boeing 737-300 aircraft.

Passenger traffic reached an all-time high in 1995 with 118,484 enplanements. By this time, Morris Air had been acquired by Southwest Airlines and no longer provided regular scheduled service to IFP. Reno Air, however, had initiated scheduled service with MD-80 aircraft. America West Express and United Express provided scheduled commuter flights with 19-passenger aircraft to Phoenix and Los Angeles. Charter traffic was a major portion of this activity as well. Charter airlines like Great American and Sun Country carried over half of the total passengers.

In 1997, passenger activity took a major downturn. Reno Air, under new management and restructuring its route system, discontinued service to IFP in May. Great American Airlines ceased all operations a month earlier in April. United Express had discontinued flights to IFP in November of 1996. As a result, traffic dropped nearly by half to 64,094 in 1997.

The expansion of casino gaming throughout the country, the rise of the American dollar overseas, and the recession in Asia were all having an impact on gaming throughout Nevada. In 1998, America West Express reduced its schedule to four flights a day and passenger enplanements declined to 30,387 for the year.

**TABLE 2A**
**Historic Enplanements**
**Laughlin/Bullhead International Airport (IFP)**

| Year | IFP Enplanements | U.S. Domestic Enplanements (millions) | IFP Market Share % |
|---|---|---|---|
| 1983 | 2,695 | 308.1 | 0.001 |
| 1984 | 5,667 | 333.8 | 0.002 |
| 1985 | 2,778 | 369.9 | 0.001 |
| 1986 | 6,213 | 404.7 | 0.002 |
| 1987 | 33,819 | 441.2 | 0.008 |
| 1988 | 29,969 | 441.2 | 0.007 |
| 1989 | 47,830 | 443.6 | 0.011 |
| 1990 | 45,923 | 456.6 | 0.010 |
| 1991 | 35,921 | 445.9 | 0.008 |
| 1992 | 38,068 | 464.7 | 0.008 |
| 1993 | 97,095 | 470.4 | 0.021 |
| 1994 | 74,194 | 511.3 | 0.015 |
| 1995 | 118,484 | 531.1 | 0.022 |
| 1996 | 116,907 | 558.1 | 0.021 |
| 1997 | 64,094 | 577.8 | 0.011 |
| 1998 | 30,387 | 600.6 | 0.005 |
| ***Constant Share Projection*** | | | |
| 2000 | 70,312 | 639.2 | 0.011 |
| 2005 | 84,095 | 764.5 | 0.011 |
| 2010 | 100,815 | 916.5 | 0.011 |
| 2015 | 120,835 | 1,098.5 | 0.011 |
| 2020 | 144,848 | 1,316.8 | 0.011 |
| ***Increasing Share Projection*** | | | |
| 2000 | 63,920 | 639.2 | 0.010 |
| 2005 | 107,030 | 764.5 | 0.014 |
| 2010 | 164,970 | 916.5 | 0.018 |
| 2015 | 241,670 | 1,098.5 | 0.022 |
| 2020 | 342,368 | 1,316.8 | 0.026 |

## ENPLANEMENT PROJECTIONS

The enplanement forecast analysis begins with a review of previous forecasts. These include the projections prepared for the 1994 Airport Master Plan and a more recent forecast prepared by the FAA in 1998 for the Terminal Area Forecasts (TAF). Both these forecasts are presented for comparison on **Exhibit 2D** and **Table 2A**.

As is evident from the exhibit, the 1994 Master Plan projections have proven to be overly optimistic with estimates of

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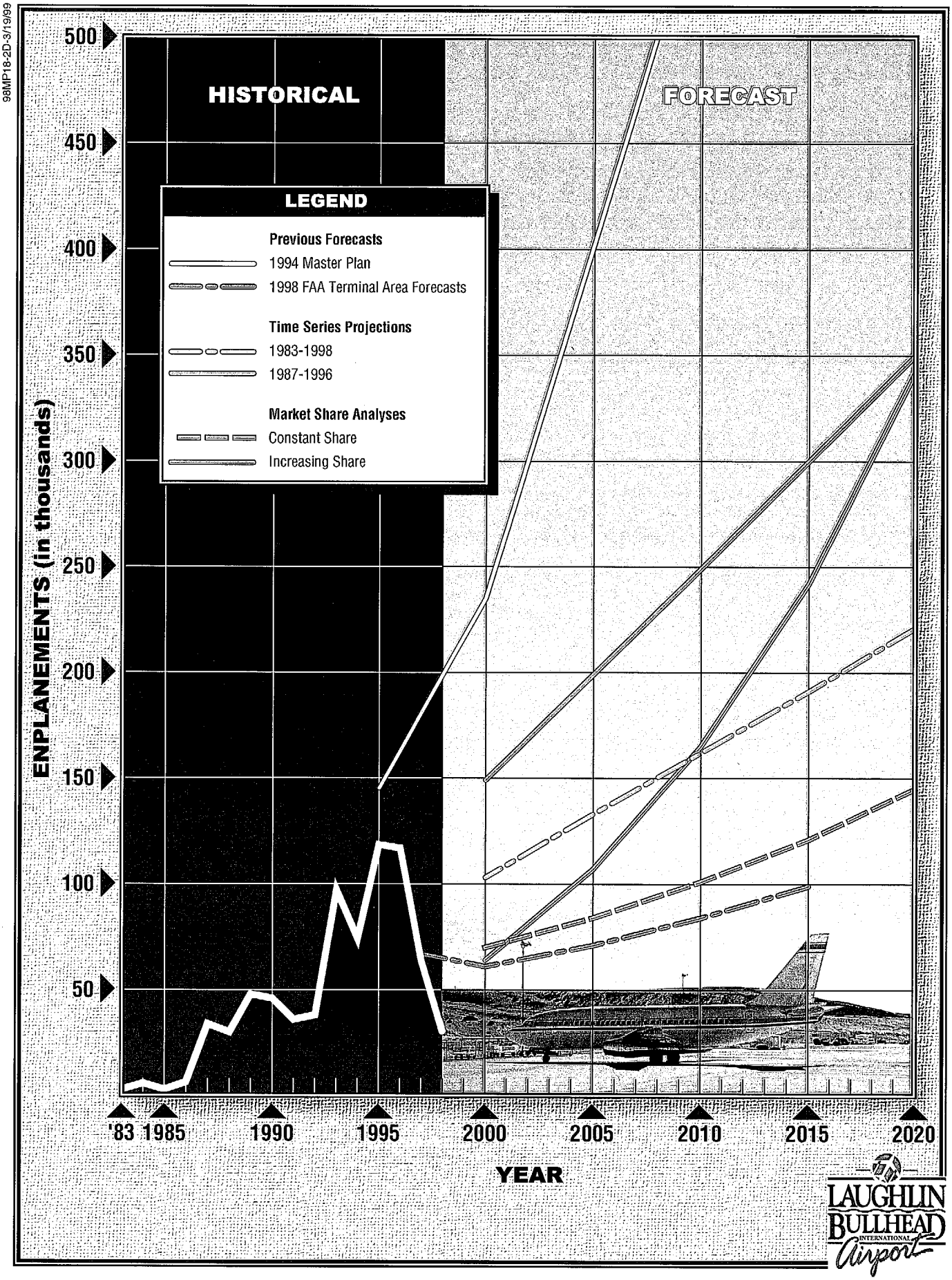


Exhibit 2D
PASSENGER ENPLANEMENT
PROJECTIONS

235,000 enplanements in the year 2000 and 874,000 by 2015. The 1998 TAF projections used 1997 as the base year and anticipated 61,000 enplanements in 2000 growing to 99,000 by 2015.

The recent decline in passenger traffic at Laughlin/Bullhead International Airport can be attributed to a variety of factors. As indicated earlier, the wide availability of gaming throughout the country has certainly had an impact. This is reflected in the recent decline in gaming revenues in Laughlin (see Table 1L). More and more areas around the country now have gaming options close by. This includes the Phoenix and Los Angeles areas, two of the larger markets for Laughlin. The primary result has been less frequent trips to Laughlin and other traditional gaming areas in Nevada. The recession overseas markets combined with the strength of the American dollar, has slowed the influx of foreign tourism.

While these economic factors have had an effect, the declines in passenger traffic have also been affected by the level of service available. The loss of scheduled jet service as well as the loss of a major charter airline probably has had a greater impact on traffic. When a community is located within two hours drive time to a major airport, such as Las Vegas, the loss of scheduled jet service can have a significant impact on enplanements.

Several analytical techniques were considered for their applicability to projecting scheduled airline enplanements at IFP. These included a time-series extrapolation, as well as several regression analyses, and market share analysis.

First, a time-series extrapolation of airline enplanements was developed based upon two different time periods. These included a long range period of 1983-1998 and the prime growth period of 1987-1996. A correlation coefficient ($r^2$) was determined for each time series. The correlation coefficient **(Pearson's "r")** measures the association between changes in the dependent variable (enplanements) and the independent variable(s) (calendar years). An $r^2$ greater than 0.95 indicates good predictive reliability. A value below 0.95, may be used with the understanding that the predictive reliability is lower. Neither time series resulted in a significant correlation with the 1983-1998 period having an $r^2$ of 0.55 and the 1987-1996 period an $r^2$ of 0.75.

Although the correlations are low, the resulting projections are still useful to indicate the extrapolation of the historic growth pattern in enplanements. For comparison, the time-series projections are presented in **Table 2B** and are also depicted on **Exhibit 2D**. The long range time-series projects an enplanement level of 221,000 passengers in 2020. The prime growth time-series projects 350,000 enplanements by the same time frame.

**Table 2A** depicts the Laughlin/ Bullhead International Airport share of the U.S. domestic enplanement market over the years. During the period that scheduled jet service was available, IFP had a 0.021 percent share. Without

scheduled jet service, the market share was typically 0.011 percent or less. **Table 2A** show the potential enplanement levels if IFP were to recapture and maintain this share of the market over the planning period. An increasing share projection was also developed that considers recapturing the former market level over time and increasing it slightly. Both projections are included on **Table 2B** and **Exhibit 2D** for comparison to the other projections.

From the exhibit it can seen that the constant market share projection is slightly higher than the TAF forecast, but grows at a similar rate over time. The increasing market share projection runs from the level of the constant share initially to nearly the level of the 1987-1996 time-series. This projection best reflects the potential at the airport to attract additional passenger with improved air service.

**TABLE 2B**
**Enplanement Projection Comparisons**

| | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|
| ***Previous Forecasts*** | | | | | |
| 1994 Master Plan | 235,000 | 403,000 | 617,000 | 874,000 | |
| 1998 FAA-TAF | 61,000 | 71,000 | 84,000 | 99,000 | |
| ***Time-Series Projections*** | | | | | |
| 1983-1998 | 103,000 | 133,000 | 162,000 | 191,000 | 221,000 |
| 1987-1996 | 149,000 | 199,000 | 249,000 | 300,000 | 350,000 |
| ***Market Share Analyses*** | | | | | |
| Constant Share | 70,000 | 84,000 | 101,000 | 121,000 | 145,000 |
| Increasing Share | 64,000 | 107,000 | 165,000 | 242,000 | 342,000 |
| (% Share) | 0.010% | 0.014% | 0.018% | 0.022% | 0.026% |

Given the previous experiences with the volatility of passenger traffic at IFP to the level of air service availability, it is important that this Master Plan be demand-based rather than time-based. A demand-based plan will be better able to respond to needs as they arise. To facilitate this, a series of planning horizons have been established based upon the forecasting range. The planning horizons that will be used as passenger enplanement milestones in the remainder of this master plan are:

- Short term - 125,000
- Intermediate term - 200,000
- Long range - 350,000

The short term horizon represents a level of passenger traffic just above the previous high activity experienced. The long range horizon represents the

potential level of activity that could be attained with the recapture and growth of the market over time.

## AIRLINE OPERATIONS

The commercial service fleet mix defines a number of key parameters in airport planning, including critical aircraft (for pavement designs and ramp geometry), terminal complex layout, and maximum stage length capabilities (affecting runway length evaluations). A projection of fleet mix has been developed for Laughlin/Bullhead International Airport by reviewing equipment used by carriers serving the airport.

Changes in equipment, airframes and engines have always had a significant impact on airline and airport planning activities. There are many on-going programs by aircraft manufacturers to improve both airframe and powerplant performance characteristics. These programs are all focusing on improvements in fuel efficiency, noise suppression and reduction in emissions, thereby reducing the adverse environmental impacts so commonly associated with jet aircraft.

Pursuant to the Congressional mandate declared in the **Airport Noise and Capacity Act of 1990**, the FAA established amendments to **F.A.R. Part 91** setting forth a schedule for the phase-out of all Stage II aircraft exceeding 75,000 pounds from the fleets of all commercial airlines. The regulation requires airlines to phase-out Stage 2 aircraft by December 31, 1999. The FAA may grant an airline an extension of the deadline to December 31, 2003 if, by July 1, 1999, their fleets include no more than 15 percent Stage 2 aircraft.

The new technology aircraft entering the fleet today operate more efficiently with greater mission flexibility and reliability. This flexibility has contributed to the large number of orders placed for the latest models of the B737, MD-80 and 90, A320, and B757. The new 737 aircraft are being manufactured in several models ranging in seating capacity from 108 to 184 seats. Several airlines have placed significant orders for the Boeing 757, ensuring that this aircraft will be seen in much greater frequency in the domestic and international fleets.

Commuter airlines are transitioning to advanced turboprop aircraft and regional jets to fit their market needs. Many of these aircraft have greater seating capacity, lower operating costs, and are considerably more comfortable for the flying public. Regional jet aircraft are now available in the 50 and 37-seat ranges.

The long term outlook on the fleet mix at Laughlin/Bullhead International Airport is dependent on traffic growth and additional technological advancements. Current trends and fleet orders have provided input into the projection of annual departures and operations by the scheduled carriers. **Table 2C** presents a percentage breakdown of the airline fleet mix by seating capacity for 1998.

Commuter aircraft with less than 20 seats dominated IFP airline operations last year. This has consisted primarily of the Beech 1900 aircraft of America

West Express (Mesa Airlines) .Boeing 737-300 and 727-200 aircraft have been utilized by the charter airlines recently.

The examination of trends in aircraft use contributes to the airline fleet mix projections that have been developed for Laughlin/Bullhead International Airport. The forecasts depicted in **Table 2C** take into account a continuing transition to larger aircraft as passenger traffic increases.

## *AIR CARGO*

Air cargo activity at Laughlin/Bullhead International Airport consists primarily of freight and mail carried by the scheduled passenger airline and freight service provided by two overnight express companies. All freight and mail is currently handled by commuter-size aircraft and there are no historic records available of the volumes carried.

**TABLE 2C**
**Scheduled Airline Fleet Mix and Operations Forecast**
**Laughlin/Bullhead International Airport**

| | | Planning Horizons | | |
|---|---|---|---|---|
| **Fleet Mix Seating Capacity** | **Actual 1998** | **Short Term** | **Inter-mediate** | **Long Range** |
| ***Major Airlines*** | | | | |
| > 165 | 0.0% | 0.0% | 0.0% | 5.0% |
| 135-164 | 9.0% | 15.0% | 15.0% | 10.0% |
| 105-134 | 5.0% | 10.0% | 15.0% | 20.0% |
| 80-104 | 0.0% | 0.0% | 0.0% | 5.0% |
| 60-79 | 0.0% | 0.0% | 0.0% | 5.0% |
| 40-59 | 0.0% | 0.0% | 5.0% | 10.0% |
| 20-39 | 0.0% | 10.0% | 20.0% | 15.0% |
| < 20 | 86.0% | 65.0% | 45.0% | 30.0% |
| Totals | 100.0% | 100.0% | 100.0% | 100.0% |
| Seats/Departure | 35.1 | 48.6 | 56.1 | 70.0 |
| Boarding Load Factor | 47.9% | 55.0% | 60.0% | 60.0% |
| Enplanements/Departures | 16.8 | 26.7 | 33.6 | 42.0 |
| Annual Enplanements | 30,387 | 125,000 | 200,000 | 350,000 |
| Annual Departures | 1,804 | 4,676 | 5,947 | 8,339 |
| Annual Operations | 3,608 | 9,353 | 11,893 | 16,679 |

Because of the proximity of Laughlin and Bullhead City to Las Vegas, the airport is not anticipated to be served by major overnight carriers in the future. Rather, commuter haulers will continue to be the norm. If a scheduled commercial jet operator reinitiates service, there may be an increase in cargo activity. This traffic in not anticipated to be significant enough to warrant the development of major cargo facilities in the future. Therefore, no

forecast of air cargo volume have been prepared. Air cargo operations are incorporated into the air taxi forecasts later in the chapter.

## *GENERAL AVIATION*

General aviation is defined as that portion of civil aviation which encompasses all facets of aircraft activity except commercial operations. To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. These indicators of general aviation demand include:

- Based Aircraft
- Based Aircraft Fleet Mix
- Annual Aircraft Operations

### BASED AIRCRAFT

The number of based aircraft is usually the most basic indicator of general aviation demand at an airport such as Laughlin/Bullhead International Airport. The number of annually based aircraft can provide a direct correlation to the need for general aviation facilities such as hangars and fuel supply. In addition, based aircraft trends can confirm the airport's role within the regional air transportation system.

**Exhibit 2E** presents the history of based aircraft at IFP since 1980. Based aircraft totals have fluctuated from a low of 41 in 1994 to a reported high of 101 in three different years. A 1998 inventory of based aircraft (**Appendix A**) indicated the current total to be 60 based aircraft.

A search of FAA general aviation aircraft registrations in the Laughlin/Bullhead area indicated there are 102 aircraft with owners in the immediate area. A review of the owners of the 60 based aircraft at IFP indicated that only 20 to 25 percent have owners with local addresses in the area. Many local aircraft are based at Eagle Airpark and Sun Valley. Eagle Airpark has 53 based aircraft, and Sun Valley has 11.

Because of the vast up-and-down swings in based aircraft, it was found that regression analyses were unreliable. Therefore, the local market share of general aviation aircraft was examined. **Table 2D** presents the Laughlin/ Bullhead International Airport share of the U.S. active general aviation since 1992. The local market share has fluctuated from 0.024 to 0.054 percent during that time period.

Based aircraft can generally be expected to increase as long as positive socioeconomic conditions exist in the area. A constant share market projection was developed using the current share of 0.031 percent. This projection reflects based aircraft growth at the national average, and is presented in **Table 2D** and **Exhibit 2E**. The result would be a net increase of 13 aircraft over the planning period.

With the strong population and employment growth forecast for the area, it is quite likely that local growth would exceed the national average. The increasing market share projection reflects a recapturing of the previous

market share over the planning period. As indicated in the table and on the exhibit, this would result in an increase of 69 based aircraft over the planning period.

**TABLE 2D**
**Based Aircraft**
**Laughlin/Bullhead International Airport**

| Year | IFP Based Aircraft | U.S. Active Aircraft | IFP Market Share % |
|---|---|---|---|
| 1992 | 76 | 185,650 | 0.041% |
| 1993 | 73 | 177,120 | 0.041% |
| 1994 | 41 | 172,935 | 0.024% |
| 1995 | 45 | 182,605 | 0.025% |
| 1996 | 101 | 187,312 | 0.054% |
| 1997 | 60 | 189,328 | 0.032% |
| 1998 | 60 | 191,562 | 0.031% |
| ***Constant Share Projection*** | | | |
| 2000 | 61 | 195,600 | 0.031% |
| 2005 | 64 | 205,274 | 0.031% |
| 2010 | 67 | 214,860 | 0.031% |
| 2015 | 70 | 224,470 | 0.031% |
| 2020 | 73 | 234,100 | 0.031% |
| ***Increasing Share Projection*** | | | |
| 2000 | 67 | 195,600 | 0.034% |
| 2005 | 82 | 205,274 | 0.040% |
| 2010 | 97 | 214,860 | 0.045% |
| 2015 | 112 | 224,470 | 0.050% |
| 2020 | 129 | 234,100 | 0.055% |

The **Table 2E** and **Exhibit 2E** also compares these projections to those of the 1994 Master Plan, the 1995 State Aviation Needs Study (SANS), and the 1998 FAA-TAF. The 1994 Master Plan projections were overly optimistic when compared to recent based aircraft. The SANS and TAF projections are slightly higher than those of the constant market share.

The increasing market share projection appears to be the most reasonable for the purposes of this Master Plan. This projection is somewhat optimistic, but it allows for consideration of recapture of market share, and also considers the possibilities should one or more of the private airports close at some point in the future. In order to develop a plan which will allow the Airport Authority to develop facilities based upon demand, the following planning horizon activity milestones have been established for based aircraft:

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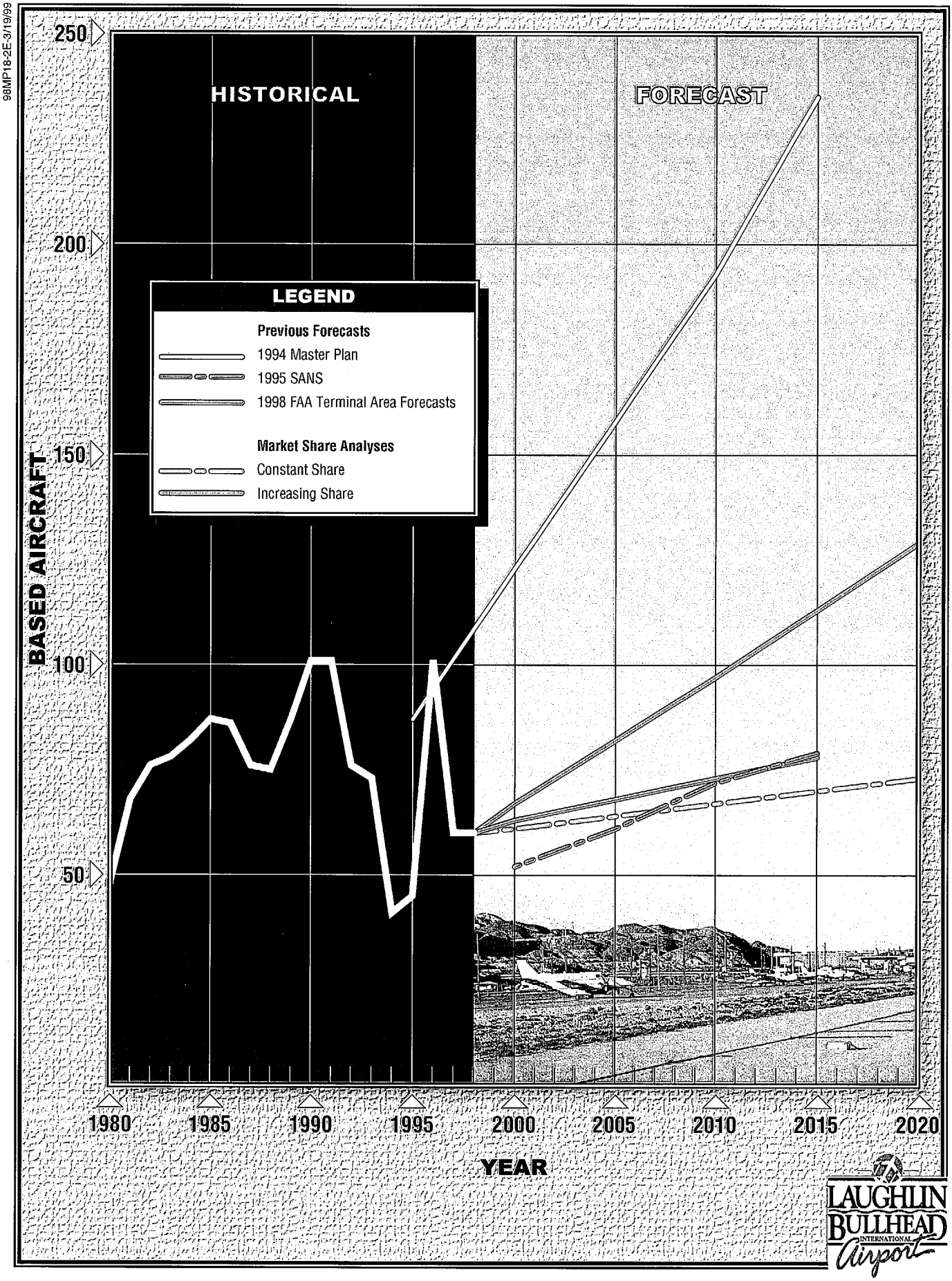


Exhibit 2E
BASED AIRCRAFT PROJECTIONS

- Short Term - 80
- Intermediate Term - 100
- Long Term - 130

## BASED AIRCRAFT MIX

The based aircraft fleet mix expected to use the airport must be known in order to properly size airport facilities. The fleet mix of based aircraft at Laughlin/ Bullhead International Airport was compared to existing and forecast U.S. fleet trends. On a national level, the overall trend is towards a higher percentage of larger, more sophisticated aircraft. The U.S. trend in aircraft mix, as presented in **FAA's Aviation Forecasts (1998-2009)** and **Exhibit 2B**, contributed to the IFP fleet mix projections in **Table 2F**.

**TABLE 2E**
**Based Aircraft Projection Comparison**

| | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|
| ***Previous Forecasts*** | | | | | |
| 1994 Master Plan | 123 | 158 | 193 | 235 | |
| 1995 SANS | 52 | 61 | 72 | 79 | |
| 1998 FAA-TAF | 63 | 68 | 73 | 78 | |
| ***Market Share Analyses*** | | | | | |
| Constant Share | 61 | 64 | 67 | 70 | 73 |
| Increasing Share | 67 | 82 | 97 | 113 | 129 |
| (% Share) | 0.034% | 0.040% | 0.045% | 0.050% | 0.055% |

**TABLE 2F**
**Based Aircraft Fleet Mix**

| | | Planning Horizons | | |
|---|---|---|---|---|
| | 1998 | Short Term | Intermediate | Long Range |
| Single Engine | 42 | 54 | 66 | 82 |
| Multi-Engine | 12 | 16 | 20 | 26 |
| Turboprop | 3 | 5 | 7 | 11 |
| Jet | 1 | 2 | 3 | 5 |
| Helicopter | 2 | 3 | 4 | 6 |
| Total Based Aircraft | 60 | 80 | 100 | 130 |

## GENERAL AVIATION

General aviation operations are classified by air traffic control towers into two types: local and itinerant. A local operation is a take-off or landing performed by an aircraft that operates in the local traffic pattern within sight

of the airport or which executes simulated approaches or touch-and-go operations at the airport. Local operations are typically training operations. Itinerant operations are those performed by an aircraft with a specific origin or destination away from the airport.

Table 1B presented estimates of general aviation operations since 1980. The ATCT has only been available the last few years so the tower counts are available for only recent years. Since the tower's hours are limited, there are additional operations that occur when the tower is closed. Based upon discussion with the tower chief and airport staff it is estimated that 20 percent of the airports operations occur when the tower is closed. The 1998 operations presented in **Table 2G** were adjusted by this factor.

**TABLE 2G**
**General Aviation Operations Projections**
**Laughlin/Bullhead International Airport**

| | | Planning Horizons | | |
|---|---|---|---|---|
| | **Actual 1998** | **Short Term** | **Intermediate** | **Long Range** |
| Based Aircraft | 60 | 80 | 100 | 130 |
| Operations/Based Aircraft | 810 | 800 | 800 | 800 |
| Total Operations | 48,617 | 64,000 | 80,000 | 104,000 |
| Itinerant Operations | 34,350 | 45,000 | 56,000 | 73,000 |
| Local Operations | 14,267 | 19,000 | 24,000 | 31,000 |

Because of the lack of consistent counts of operations, it is difficult to consider regression and share-of-the-market projections for general aviation operations. Therefore, operations were projected based upon the current ratio of operations per based aircraft. **Table 2G** depicts the planning horizon levels of general aviation operations based upon 800 operations per based aircraft.

Itinerant operations last year averaged 70 percent of the total general aviation operations. This is down from previous counts due to increases in training activity. The planning horizons were projected with the same percentage and are also presented in **Table 2G.**

**Table 2H** compares these projections to those of the 1994 Master Plan, the 1995 SANS, and the 1998 FAA-TAF. The forecast is lower than the 1994 Master Plan and the SANS, but is significantly higher than the 1998 FAA-TAF.

**TABLE 2H**
**General Aviation Projection Comparisons**

| | 2000 | 2005 | 2010 | 2015 | 2020 |
|---|---|---|---|---|---|
| ***Previous Forecasts*** | | | | | |
| 1994 Master Plan | 62,000 | 78,000 | 94,000 | 109,000 | |
| 1995 SANS | 118,420 | 138,916 | 163,967 | 179,908 | |
| 1998 FAA-TAF | 43,657 | 45,767 | 47,980 | 50,301 | |
| ***Master Plan Projections*** | | | | | |
| Operations | 53,600 | 65,600 | 77,600 | 89,600 | 103,200 |

## *AIR TAXI*

Air taxi activity has been independently reported by air traffic control towers since 1972 and was instituted to include commuter passenger and all-cargo airlines, as well as for-hire general aviation operations. Subtracting the commercial airline operations from the air taxi operations reported by the ATCT indicates other air taxi operations totaled 3,180 in 1998. This operation level was forecast to increase at approximately 3.5 percent per year, a rate similar to that projected for commercial operations in the **FAA Aviation Forecasts 1998-2009**. The resulting planning horizons for air taxi activity is included in the summary exhibit at the end of the chapter.

## *MILITARY*

Military activity accounts for, by far, the smallest portion of the operational activity at Laughlin/Bullhead International Airport. Over the last five years, the number of military operations has averaged less than 500 annually according to ATCT counts. The 1998 tower count was 234 military operations.

Most of the military activity is helicopter with an occasional C-12 aircraft. Military activity is expected to continue to be a small part of the operational mix at IFP in the future. For planning purposes, military activity is projected at a constant 300 annual operations for each planning horizon.

## *PEAKING CHARACTERISTICS*

Many airport facility needs are related to the levels of activity during peak periods. The periods used in developing facility requirements for this study are as follows:

- **Peak Month** - The calendar month when peak passenger enplanements or aircraft operations occur.
- **Design Day** - The average day in the peak month. Normally this indicator is easily derived by dividing the peak month enplanements or operations by the

number of days in the month. However, commercial activity is often heavier on weekdays than on weekends. Therefore, the design day for airline activity must be adjusted to reflect the average weekday during the peak month.

- **Busy Day** - The busy day of a typical week in the peak month. This descriptor is used primarily to determine airline terminal building space and general aviation ramp space requirements.

- **Design Hour** - The peak hour within the design day. This descriptor is used particularly in airfield demand/capacity analysis, as well as in determining terminal building and access road requirements.

It is important to note that only the peak month is an absolute peak within a given year. All the others will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

## AIRLINE PEAK PERIODS

At Laughlin/Bullhead International Airport, the peak passenger demands generally occur during spring, fall, and winter months as commercial charter carriers increasingly utilize the airport. Peak month enplanement data over the last four years was reviewed. The peak month for enplanements in 1998 was 4,979 reached in March. During this month, approximately 80 percent of the enplanements were generated by charter airlines. By comparison, the peak month in 1995, when annual enplanements were four times higher, was October with 12.8 percent of annual enplanements.

Peak month enplanements at the airport account for 16.4 percent of total annual enplanements. Due to the seasonal variances generated by the charter airlines, this trend will likely continue until additional regular scheduled airline service is provided. Thus, peak month enplanements are forecast initially to constitute 16 percent of total annual enplanements, then decrease to 12 percent by the long range planning horizon as enplanement levels and airline services increase and are more evenly spread on a monthly basis.

Hourly enplanements are examined as a percentage of design day activity. This measure is particularly helpful in determining space needs of the departure lounge, baggage areas, and other design features of the terminal building. Design hour factors were based on seating capacities during the peak departure periods and peak hour enplanements for 1998.

Current peak hourly passengers were figured considering a fully loaded Boeing 727 charter aircraft and a half loaded America West commuter aircraft. This scenario yields 160 passengers in the design hour which equates to approximately 45 percent of design day passengers. As flights increase the percentage of passengers in the peak hour will generally decrease. Thus, peak hour passengers has been forecast to decrease to 30 percent of the design day by the long range planning

horizon. **Table 2J** outlines the design period passenger levels for the forecast period.

As previously mentioned, airline operations fluctuate on a seasonal basis due to charter airlines use of the airport. Regularly scheduled service currently consists of four daily departures (eight daily operations) by America West Express. On weekends, these flights are typically reduced. While airline operations peaking characteristics may begin to spread as the number of operations increases, the peak factors will still remain lower than those for enplanements. This occurs as the airlines absorb increased load factors and use higher capacity aircraft during peak enplanement periods. Charter operations, however, will likely remain seasonal and somewhat sporadic.

In 1998, peak month airline operations of 454 accounted for 12 percent of annual airline operations. As service increases, it is likely that the percentage of peak month operations will decrease. Thus, peak month operations were forecast to decrease to 11 percent by the long range planning horizon. Peak operations currently account for approximately 15 percent of design day operations. As service increases, it is likely that the number of operations in the design hour will increase slightly. Thus, peak hour airline operations were forecast to reach 18 percent of design day operations by the long range horizon. **Table 2J** also presents the forecasts for peak period airline operations at Laughlin/Bullhead International Airport.

**TABLE 2J**
**Airline Peaking Characteristics**
**Laughlin/Bullhead International Airport**

| | 1998 | Short Term | Intermediate Term | Long Range |
|---|---|---|---|---|
| ***ENPLANEMENTS*** | | | | |
| Annual | 30,387 | 125,000 | 200,000 | 350,000 |
| Peak Month | 4,979 | 16,000 | 25,000 | 42,000 |
| Design Day | 333 | 800 | 1,000 | 1,500 |
| Design Hour | 150 | 280 | 320 | 400 |
| ***OPERATIONS*** | | | | |
| Annual Operations | 3,608 | 9,400 | 11,900 | 16,700 |
| Peak Month | 454 | 1,128 | 1,369 | 1,837 |
| Design Day | 20 | 50 | 56 | 64 |
| Design Hour | 3 | 8 | 9 | 12 |

## GENERAL AVIATION PEAK PERIODS

After an adjustment for the hours when the tower is closed, total general aviation operations have averaged 42,850 for the previous five years. In 1998, total general aviation operations were 48,617. The peak month for recorded general aviation operations in 1998 was January with 5,251 operations, 10.8 percent of total general aviation operations in 1998. This percentage was applied to forecast general aviation operations to derive future peak month estimates. Busy day operations were determined to be 42 percent more than the design day, and were projected as 1.4 times design day activity. Hourly operational counts were not available. Based on similar airports and industry standards, design hour operations were estimated and forecast as 15 percent of design day operations. **Table 2K** summarizes peak activity forecasts for the airport.

**TABLE 2K**
**General Aviation Peak Operations Forecasts**
**Bullhead/Laughlin International**

| | 1998 | Short Term | Intermediate Term | Long Range |
|---|---|---|---|---|
| Annual Operations | 48,617 | 64,000 | 80,000 | 104,000 |
| Peak Month | 5,251 | 6,720 | 8,400 | 10,920 |
| Busy Day | 250 | 314 | 392 | 510 |
| Design Day | 175 | 224 | 280 | 364 |
| Design Hour | 26 | 34 | 42 | 55 |

## *SUMMARY*

This chapter has outlined the various aviation demand levels to be anticipated over the planning period. **Exhibit 2F** provides a summary of the aviation planning horizon milestones for Laughlin/Bullhead International Airport. In general, the activity projections are lower than previously forecast. The next step in the planning process is to assess the capacity of the existing facilities to determine what facilities will be necessary to best meet the planning horizons. This will be examined in the following chapter.

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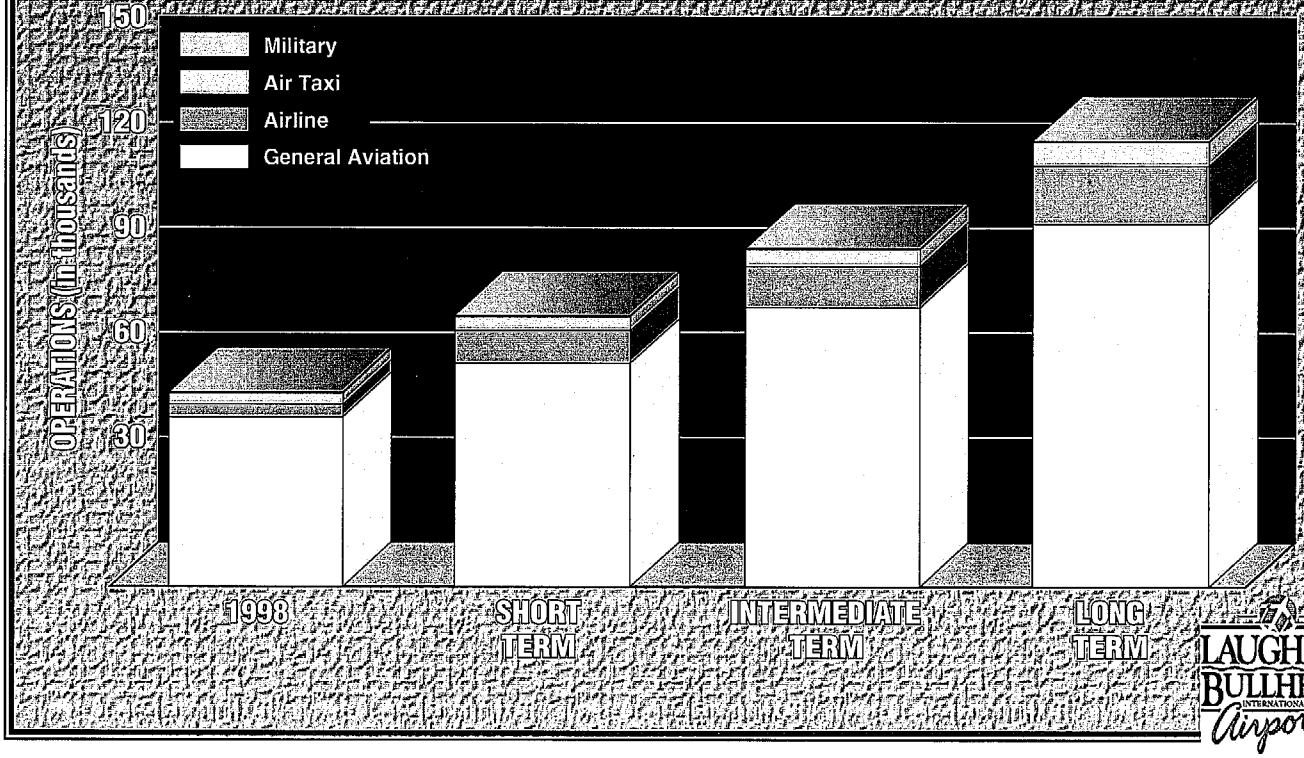
# SUMMARY OF AVIATION ACTIVITY PLANNING HORIZONS

| | *Historical* | *Planning Horizon* | | |
|---|---|---|---|---|
| **CATEGORY** | **1998** | **SHORT TERM** | **INTERMEDIATE TERM** | **LONG RANGE** |
| ***ANNUAL OPERATIONS*** | | | | |
| General Aviation | | | | |
| Itinerant | 34,350 | 45,000 | 56,000 | 73,000 |
| Local | 14,267 | 19,000 | 24,000 | 31,000 |
| Total GA Operations | 48,617 | 64,000 | 80,000 | 104,000 |
| Airline | 3,608 | 9,400 | 11,900 | 16,700 |
| Air Taxi | 3,180 | 4,000 | 4,800 | 6,800 |
| Military | 281 | 300 | 300 | 300 |
| Total Annual Operations | 55,686 | 77,700 | 97,000 | 127,800 |
| ***AIRLINE ENPLANEMENTS*** | | | | |
| Total Enplanements | 30,387 | 125,000 | 200,000 | 350,000 |
| ***BASED AIRCRAFT*** | | | | |
| Single Engine Piston | 42 | 54 | 66 | 82 |
| Multi-Engine Piston | 12 | 16 | 20 | 26 |
| Turboprop | 3 | 5 | 7 | 11 |
| Business Jet | 1 | 2 | 3 | 5 |
| Helicopter | 2 | 3 | 4 | 6 |
| Total Based Aircraft | 60 | 80 | 100 | 130 |

## TOTAL ANNUAL OPERATIONS




LAUGHLIN BULLHEAD INTERNATIONAL Airport

Exhibit 2F
PLANNING HORIZON SUMMARY